CAN August 12 1996

MEMORANDUM FOR DISTRIBUTION

SUBJECT: CIO-Letter 96-11, Policy for Implementing Software Metrics

This letter is directive in nature and expires one year from the date of this letter unless sooner superseded or rescinded

DSDC is a multifunctional, geographically dispersed Central Design Activity supporting multiple business areas. Various DLA requirements generators are tasking the DLA Systems Design Center (DSDC) to develop and report very different and specific performance metrics for software development. The Software Engineering Institute (SEI) at Carnegie Mellon University, in support of DoD, has developed a process to assess software development activities of an organization. This process uses a Software Capability Maturity Model (CMM) to assess the performance level of the organization and provides guidance for moving up in capability. The CMM defines an evolutionary approach to the use of metrics as follows:

a. At level 1, metrics are ad hoc or nonexistent.

b. At level 2, metrics are project related. They define software size, effort and schedule. Each project defines, collects and stores its own metrics. Generally metrics are used within the project itself and are only shared informally.

c. At level 3, each project uses a software process tailored from the organization's standard software process. Metrics are collected and stored for organizational use during project estimate efforts and process improvement efforts.

d. At level 4, a fully defined set of required metrics based on the organization's standard software process is collected and stored.

e. At level 5, metrics drive the selection of areas for technology and process improvement. Improvement efforts are evaluated for the effect on the organization's process capability.

Providing the DLA community with new business systems that meet DLA requirements on time and within budget is a goal for our entire community. A major element in attaining this goal is the institution of a metrics program that will provide DLA Program Managers with a process and a set of indicators that will enable a view into the complex software development and maintenance process. For all software development efforts initiated after October 1, 1996, the Program Manager and/or Project Managers will be responsible for the identification and collection of core performance metrics in six categories: Cost, Schedule, Size, Requirements Stability, Testing and Quality.

Specific project level requirements for Cost and Schedule have already been identified by DLA's functional and program managers. These metrics include the following:

a. A Schedule Variance consisting of a comparison between the Budgeted Cost for Work Scheduled (BCWS) and the Budgeted Cost for Work Performed (BCWP).

b. A Cost Variance showing earned value consisting of a comparison between the BCWP and the Actual Cost for Work Performed (ACWP).

Project metrics and management indicators are identified in MIL-STD-498, Appendix F. The following additional metrics shall be used:

Software Size: Represented as Source Lines of Code or Function Points.
Requirements Stability: Represented as changes to the requirements baseline.
Software Complexity: Use Function Points or other method of quantifying complexity.
Software Quality: Represented as errors corrected vs errors identified.
Software Testing: Represented as Breadth and Depth of testing and test results that documents changes to software generated by testing.

This policy directs that for all newly initiated software development efforts, Program Managers and Project Managers will identify the minimally required capability level of the software development activity for the program. This capability level will be expressed as an SEI CMM level of performance or other appropriate software development performance standard. Managers will also identify the metrics to be used as standards to manage and evaluate the software developer's performance. Programs will also follow all other approved policy letters related to software development.

This policy further directs that DSDC:

a. Identify and define specific software metrics for level 2 KPAs by the 1st Quarter of FY97.

b. Direct the use of defined level 2 metrics for reporting on any new project initiated after August 1996.

c. Identify and define specific software metrics for level 3 KPAs by 4th Quarter of FY97.

For further information, please contact William Gill, CANP, at (703) 767-2164 or DSN 427-2164.

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THOMAS J. KNAPP
Chief Information Officer
Defense Logistics Agency

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